CLAIMS

What is Claimed is:

1. An implantable medical device for detection of changes in impedance in a patient, comprising:

means for generating measured impedances;

means for generating an adaptive baseline trend of the measured impedances corresponding to a first time period;

means for generating a short term trend of the measured impedances corresponding to a second time period less than the first time period; and

means for generating a metric of impedance change between the adaptive baseline trend and one of a most recent measured impedance and the short term trend of the measured impedances.

2. The implantable medical device of claim 1, wherein the metric is a difference between the adaptive baseline trend and the short term trend of the measured impedances.

3. The implantable medical device of claim 1, wherein the metric is an accumulated difference between the adaptive baseline trend and the most recent measured impedance.

4. The implantable medical device of claim 3, wherein the metric is set to zero when the short term trend intersects the adaptive baseline trend.

5. The implantable medical device of claim 1, wherein the adaptive baseline trend is initially generated using a first computation scheme and is subsequently generated using a second computation scheme different from the first computation scheme.

6. The implantable medical device of claim 5, wherein the first computation scheme is performed at a first rate and the second computation scheme is performed at a second rate less that the first rate.

7. The implantable medical device of claim 6, wherein the first rate is computed in response to a predetermined number of the generated measured impedances.

8. The implantable medical device of claim 7, wherein the predetermined number is equal to four.

9. The implantable medical device of claim 1, wherein the short term trend is initially generated using a first computation scheme and is subsequently generated using a second computation scheme different from the first computation scheme.

10. The implantable medical device of claim 9, wherein the first computation scheme is performed at a first rate and the second computation scheme is performed at a second rate less that the first rate.

11. The implantable medical device of claim 10, wherein the first rate is computed in response to a predetermined number of the generated measured impedances.

12. The implantable medical device of claim 11, wherein the predetermined number is equal to four.

13. The implantable medical device of claim 1, further comprising means for comparing the metric of impedance change to a predetermined

threshold and determining corresponding significant events in response to the comparing.

14. The implantable medical device of claim 13, wherein the significant events include one of storing data within the implantable medical device, apply or modifying a delivered therapy, notifying the patient, notifying medical personnel, and modifying frequency of impedance measurement.

15. The implantable medical device of claim 1, wherein the measured impedance is generated between 12 pm and 5 pm.

16. The implantable medical device of claim 1, further comprising means for updating the short term trend by generating a weighted sum of the short term trend for two previous days and the measured impedance generated for the current day and the two previous days.

17. The implantable medical device of claim 1, further comprising means for updating the adaptive baseline trend by setting the adaptive baseline trend equal to a previous adaptive baseline trend reduced by a predetermined downdrift in response to the current adaptive baseline trend being greater than the current short term trend, and by setting the adaptive baseline trend equal to the previous adaptive baseline trend increased by a predetermined updrift in response to the current adaptive baseline trend being less than the current short term trend, wherein the updrift is greater than the downdrift.

18. The implantable medical device of claim 17, wherein the downdrift is approximately equal to 0.055 ohms and the updrift is approximately equal to 0.18 ohms.

19. The implantable medical device of claim 14, wherein the determined significant events are subsequently terminated in response to the short term trend being equal to the adaptive baseline trend.

20. The implantable medical device of claim 1, wherein the measured impedances are generated a predetermined number of days prior to generation of the adaptive baseline trend and the short term trend.

21. A method for detection of changes in impedance a patient, comprising:

generating measured impedances;

generating an adaptive baseline trend of the measured impedances corresponding to a first time period;

generating a short term trend of the measured impedances corresponding to a second time period less than the first time period; and

generating a metric of impedance change between the adaptive baseline trend and one of a most recent measured impedance and the short term trend of the measured impedances.

22. The method of claim 21, wherein the metric is a difference between the adaptive baseline trend and the trend of the measured impedances.

23. The method of claim 21, wherein the metric is an accumulated difference between the adaptive baseline trend and the most recent measured impedance.

24. The method of claim 23, further comprising setting the metric to zero when the short term trend intersects the adaptive baseline trend.

25. The method of claim 21, wherein the adaptive baseline trend is initially generated using a first computation scheme and is subsequently generated using a second computation scheme different from the first computation scheme.

26. The method of claim 25, wherein the first computation scheme is performed at a first rate and the second computation scheme is performed at a second rate less that the first rate.

27. The method of claim 26, wherein the first rate is computed in response to a predetermined number of the generated measured impedances.

28. The method of claim 27, wherein the predetermined number is equal to four.

29. The method of claim 21, wherein the short term trend is initially generated using a first computation scheme and is subsequently generated using a second computation scheme different from the first computation scheme.

30. The method of claim 29, wherein the first computation scheme is performed at a first rate and the second computation scheme is performed at a second rate less that the first rate.

31. The method of claim 30, wherein the first rate is computed in response to a predetermined number of the generated measured impedances.

32. The method of claim 31, wherein the predetermined number is equal to four.

33. The implantable medical device of claim 21, further comprising comparing the metric of impedance change to a predetermined threshold and determining corresponding significant events in response to the comparing.

34. The method of claim 33, wherein the significant events include one of storing data within the implantable medical device, apply or modifying a delivered therapy, notifying the patient, notifying medical personnel, and modifying frequency of impedance measurement.

35. The method of claim 21, wherein the measured impedance is generated between 12 pm and 5 pm.

36. The method of claim 21, further comprising updating the short term trend by generating a weighted sum of the short term trend for two previous days and the measured impedance generated for the current day and the two previous days.

37. The method of claim 21, further comprising updating the adaptive baseline trend by setting the adaptive baseline trend equal to a previous adaptive baseline trend reduced by a predetermined downdrift in response to the current adaptive baseline trend being greater than the current short term trend, and by setting the adaptive baseline trend equal to the previous adaptive baseline trend increased by a predetermined updrift in response to the current adaptive baseline trend being less than the current short term trend, wherein the updrift is greater than the downdrift.

38. The method of claim 37, wherein the downdrift is approximately equal to 0.055 ohms and the updrift is approximately equal to 0.18 ohms.

39. The method of claim 34, wherein the determined significant events are subsequently terminated in response to the short term trend being equal to the adaptive baseline trend.

40. The method of claim 21, wherein the measured impedances are generated a predetermined number of days prior to generation of the adaptive baseline trend and the short term trend.

41. An implantable medical device, comprising:

a plurality of electrodes;

an output circuit outputting a plurality of output pulse signals along a vector

formed by electrodes of the plurality of electrodes;

a measurement circuit generating a corresponding plurality of measurement

signals in response to the plurality of output pulse signals; and

a microprocessor determining a plurality of period average impedances in response to the plurality of output pulse signals and the plurality of measurement signals corresponding to a predetermined time period, and generating an adaptive baseline trend of period average impedances of the plurality of period average impedances corresponding to a first time period and a short term trend of period average impedances of the plurality of period average impedances corresponding to a second time period less than the first time period, the microprocessor generating a metric of impedance change between the baseline trend and one of a most recent period average impedance and the short term trend.

42. The implantable medical device of claim 41, wherein the metric is a difference between the adaptive baseline trend and the short term trend of the measured impedances.

43. The implantable medical device of claim 41, wherein the metric is an accumulated difference between the adaptive baseline trend and the most recent measured impedance.

44. The implantable medical device of claim 43, wherein the metric is set to zero when the short term trend intersects the adaptive baseline trend.

45. The implantable medical device of claim 41, wherein the adaptive baseline trend and the short term trend are initially generated using a first computation scheme and are subsequently generated using a second computation scheme different from the first computation scheme.

46. The implantable medical device of claim 45, wherein the first computation scheme is performed at a first rate and the second computation scheme is performed at a second rate less that the first rate.

47. The implantable medical device of claim 46, wherein the first rate is computed in response to a predetermined number of the generated measured impedances.

48. The implantable medical device of claim 47, wherein the predetermined

number is equal to four.

49. The implantable medical device of claim 41, wherein the microprocessor

compares the metric of impedance change to a predetermined threshold and determines corresponding significant events in response to the comparing.

50. The implantable medical device of claim 49, wherein the significant events

include one of storing data within the implantable medical device, apply or modifying a delivered therapy, notifying the patient, notifying medical personnel, and modifying frequency of impedance measurement.

52. The implantable medical device of claim 41, wherein the microprocessor determines each period average impedance of the plurality of period average impedances between 12 pm and 5 pm.

53. The implantable medical device of claim 41, wherein the microprocessor updates the short term trend by generating a weighted sum of the short term trend for two previous days and the period average impedance determined for the current day and the two previous days.

54. The implantable medical device of claim 41, wherein the microprocessor updates the adaptive baseline trend by setting the adaptive baseline trend equal to a previous adaptive baseline trend reduced by a predetermined downdrift in response to the current adaptive baseline trend being greater than the current short term trend, and by setting the adaptive baseline trend equal to the previous adaptive baseline trend increased by a predetermined updrift in response to the current adaptive baseline trend being

less than the current short term trend, wherein the updrift is greater than the downdrift.

55. The implantable medical device of claim 54, wherein the downdrift is approximately equal to 0.055 ohms and the updrift is approximately equal to 0.18 ohms.

56. The implantable medical device of claim 50, wherein the determined significant events are subsequently terminated in response to the short term trend being equal to the adaptive baseline trend.

57. The implantable medical device of claim 41, wherein period average impedances of the plurality of period average impedances are determined a predetermined number of days prior to generation of the adaptive baseline trend and the short term trend.

58. A computer readable medium having computer executable instructions for performing a method comprising:

generating measured impedances;

generating an adaptive baseline trend of the measured impedances corresponding to a first time period;

generating a short term trend of the measured impedances corresponding to a second time period less than the first time period; and

generating a metric of impedance change between the adaptive baseline trend and one of a most recent measured impedance and the short term trend of the measured impedances.